REMARKS/ARGUMENTS

Claims 1-20 are pending in the present application. Claims 12-14 and 18-20 were canceled. Claims 6, 7, 15 and 16 were amended, and Claims 21-24 were added. Reconsideration of the claims is respectfully requested.

Amendments were made to the specification to correct errors and to clarify the specification. No new matter has been added by any of the amendments to the specification.

I. Response to Drawing Objection

In the Office Action, the Examiner objected to the drawings in that certain described steps of the specification, at page 19, lines 12-13, were referenced as steps **518** and **520**, respectively. However, **Figure 5A** of Applicant's drawings shows these same described steps to be steps **520** and **522**, respectively.

In a phone discussion on February 26, 2006, the Examiner and Applicant's attorney discussed correcting this oversight by correcting Applicant's specification rather than the drawings. Applicant considers that this error arose in the specification, at page 19, lines 12-13, and that Applicant's drawings as originally filed are accurate and correct. Accordingly, Applicant has amended the specification, at page 19, lines 12-13, so that the previous step "**518**" now reads as step "**520**" and the previous step "**520**" now reads as step "**522**". This portion of the specification is now compatible with **Figure 5A** of the drawings, and Applicant considers that the objection to the drawings has been overcome. Applicant, through his attorney, expresses appreciation to the Examiner for taking time to discuss this matter with Applicant's attorney.

II. Allowable Subject Matter

In the Office Action, the Examiner stated that Applicant's Claims 14-17 respectively contain allowable subject matter. Applicant, through his attorney, expresses appreciation to the Examiner for this statement. In view thereof, Applicant has amended independent Claim 7 to recite the respective limitations of Claim 14, now canceled, together with respective limitations of intervening Claims 12 and 13, also now canceled. Accordingly, amended Claim 7 is now considered to be allowable over the prior art, and to be in condition for allowance. Claims 8-11 which respectively depend from amended Claim 7, as well as dependent Claims 15-17, are also considered to be in condition for allowance. Moreover, independent Claim 21 has been added to recite patentable subject matter of Claim 14. Claims 22-24, depending from Claim 21, have been added to recite patentable subject matter of Claims 15-17, respectively. Thus, Claims 21-24 are likewise considered to be allowable over the prior art, and to be in

PAGE 10/15 * RCVD AT 3/13/2006 5:06:18 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-6/29 * DNIS:2738300 * CSID:972 385 7766 * DURATION (mm-ss):04-10

condition for allowance. Therefore, the only issue remaining in the application is the patentability of Claims 1-6.

III. 35 U.S.C. § 102, Anticipation

The Examiner has rejected Claim 1 under 35 U.S.C. § 102(b) as being anticipated by U. S. Patent No. 5,978,588, to Wallace. This rejection is respectfully traversed.

IV. 35 U.S.C. § 103, Obviousness

The Examiner has rejected Claims 2-13 and 18-20 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,978,588, to Wallace. Claims 12-13 and 18-20 have been canceled. Applicant considers that amended Claim 7 and Claims 8-11 depending therefrom are now allowable, as discussed above. The rejection of Claims 2-6 is respectfully traversed.

V. Principal Teachings of Applicant's Invention

In making his invention, Applicant recognized that it would be advantageous to reduce the number of upward directed edges in a cyclic compound directed graph. A directed graph has nodes, wherein edges interconnect the graph nodes and are defined thereby. Additionally, Applicant recognized that reduction of upward directed edges could be achieved by providing a graphing application that identifies edges for inversion.

In furtherance of his objective, Applicant discloses a procedure that includes a first node ordering subroutine. In this subroutine sink nodes and source nodes are respectively removed from a graph, and placed in corresponding subsets of a first node order subset pair (such as right and left subsets). The node ordering subroutine is shown in **Figure 5B**. A recursive evaluation is then carried out, to determine if the remaining graph nodes include more than one top-level subgraph node. If so, the graph is divided into two or more graph partitions. **Figure 5C** of the drawings illustrates recursive evaluation, and **Figure 5D** shows dividing the graph into partitions. Thereafter, as shown by steps **576** and **578** of **Figure 5D**, a pair of node order subsets is generated for each partition.

Finally, as shown by **Figure 5E**, the node order subsets of respective pairs are selectively concatenated and ordered, to provide a complete node order set. Nodes in this set have sequence numbers, intended for use in identifying an edge for inversion.

PAGE 11/15 * RCVD AT 3/13/2006 5:06:18 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-6/29 * DNIS:2738300 * CSID:972 385 7766 * DURATION (mm-ss):04-10

VI. Rejection of Claim 1

In the Office Action, the Examiner stated the following in rejecting Applicant's Claim 1:

> 3. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Wallace U.S. Patent No. 5,978,588.
> 4. Note with respect to claim 1, Wallace discloses a Method, Computer Program (Claim 2 of Wallace) and a Computer system comprising of a processor and memory (col. 3, line 27-35) that divides a source program into blocks and generates a control flow graph and a data flow graph. The invention then identifies strongly connected components of the data flow graph and recursively breaks it down to yield a plurality of directed acyclic graphs (col. 4, line 61-64) to, eventually, generate object code for the blocks. During the process of creating the plurality of graphs, Wallace teaches the use of an algorithm that repeats recursively on the nodes to find the strongly connected components (col. 5, line 16-180. Once the strongly connected components are determined and having decomposed the data flow graph into data flow graphs that are also directed acyclic graphs, Wallace further teaches the creation of a set of value equivalent nodes by examining each resulted graph. The set of value equivalent nodes is used to form another set for a control flow graph that corresponds to the current data flow graphs (directed acyclic graphs) (col. 6, line 15-17). **[Office Action dated December 12, 2005, p. 3)**

Thus, in regard to Claim 1, the Office Action cites sections of the Wallace reference at col. 3, lines 27-36; col. 4, lines 61-64; col. 5, lines 16-18; col. 6, lines 15-17; and Claim 2. These sections read as follows:

> FIG. 1 is a block diagram of a data processing system used in accordance with a preferred embodiment of the present invention. In FIG. 1, computer system 100 includes a processor 102; a memory 104; input/output lines 105; an input device 150, such as a keyboard, a mouse, and a voice input device; and a display device 160, such as a display terminal. Computer 100 also includes an input device 161, such as a floppy disk drive, CD ROM reader, or DVD reader, that reads computer instructions stored on computer readable medium 162, such as a floppy disk, a CD ROM, or a **[col. 3, lines 27-36]**
>
> In step 306, compiler 124 determines strongly connected components (scc's) of the dfg. This involves decomposing the dfg into nested subgraphs, each having entry and exit edges. **[col. 4, lines 61-64]**
>
> Repeat recursively on what remains--creating abstract nodes and finding nested (non-trivial) sccs. **[col. 5, lines 16-18]**
>
> In step 309, after a value equivalent set N is found, the compiler 124 determines a cut set for the cfg corresponding to the current dfg-dag. **[col. 6, lines 15-17]**
>
> 2. A computer program product including:
> a computer usable medium having computer readable code embodied therein for causing compilation of a source program into an object program and of optimally placing code blocks of the source program, the computer program product comprising:
> computer readable program code devices configured to cause a computer to effect receiving the source program;
> computer readable program code devices configured to cause a computer to effect dividing the source program into source program blocks;

PAGE 12/15 * RCVD AT 3/13/2006 5:06:18 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-6/29 * DNIS:2738300 * CSID:972 385 7766 * DURATION (mm-ss):04-10

computer readable program code devices configured to cause a computer to effect determining a control flow graph, a data flow graph, and a plurality of dfg-dag's for the source program; computer readable program code devices configured to cause a computer to effect finding a minimum cut set in a control flow graph generated in accordance with the dfg-dag's; and computer readable program code devices configured to cause a computer to effect moving computer instructions between the source code blocks in accordance with the minimum cut set. **[col. 10, lines 30-53]**

VII. Claim 1 Distinguishes over Wallace

A prior art reference anticipates a claimed invention under 35 U.S.C. § 102 only if every element of the claimed invention is identically shown in that single reference, arranged as they are in the claims. *In re Bond*, 910 F. 2d 831, 832, 15 U.S.P.Q. 2d 1566, 1567 (Fed Cir. 1990). All limitations of the claimed invention must be considered when determining patentability. *In re Lowry*, 32 F. 3d 1579, 1582, 21 U.S.P.Q. 2d 1031, 1034 (Fed Cir. 1994). Anticipation focuses on whether a claim reads on the product or process a prior art reference discloses, not on what the reference broadly teaches. Kalman v. Kimberly-Clark Corp., 713 F. 2d 760, 218 U.S.P.Q. 781 (Fed Cir. 1983). Moreover, it is a fundamental principle of patent law that prior art must be considered in its entirety. **MPEP 2141.02.**

Applicants respectfully submit that Wallace does not teach every element of the claimed invention arranged as they are in Claim 1. For example, Wallace does not teach, in the over-all combination of Claim 1, either of the following Claim 1 features:

(1) Evaluating a plurality of graph nodes for generation of a first node order subset pair

(2) Generating respective node order subset pairs of the graph partition

From the above discussion of Applicant's invention and from the application, it is seen that Applicant's inventive procedure can be summarized as follows:

(1) Carry out a first node ordering subroutine on a plurality of graph nodes, to generate a first node order pair subset (**Figure 5B**).

(2) Using recursive evaluation, determine that remaining graph nodes include a plurality of top-level subgraph nodes (**Figure 5C**).

(3) Divide graph into a plurality of graph partitions (**Figure 5D**, step 571).

(4) Generate further node order subset pairs, one subset pair for each graph partition (**Figure 5D**, steps 576 and 578).

(5) Selectively concatenate subsets of respective pairs, to generate a complete node order set for use in determining an edge for inversion (**Figure 5E**).

PAGE 13/15 * RCVD AT 3/13/2006 5:06:18 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-6/29 * DNIS:2738300 * CSID:972 385 7766 * DURATION (mm-ss):04-10

It is seen from the above summary that Applicant discloses a comparatively intricate sequence of steps, to achieve the objective of determining an edge for inversion. It is readily apparent that generating pairs of node order subsets, as recited by Claim 1, is absolutely essential for Applicant's method. This is emphasized in the application, such as at page 35, line 13 through page 36, line 21, in connection with **Figures 6Q-6T** and **Figure 5E**. The teachings thereof clearly disclose that the first node subset pair of Claim 1, and the Claim 1 subset pairs of the graph partitions, are all required to generate complete node order set **455a**, shown in **Figure 6T**.

In contrast to the teachings of Applicant's Claim 1, Claim 2 of the Wallace reference, at col. 10, lines 30-53, discloses that Wallace is directed to an arrangement for reordering blocks in a compiled computer program. Wallace discloses dividing a source program into blocks and determining a control flow graph (cfg), data flow graph (dfg) and a plurality of directed acyclic graphs (dfg-dag's). A minimum cut set is found in a cfg, and computer instructions are moved between the source code blocks in accordance with the minimum cut set.

It is readily apparent that none of the above sections of Wallace, cited against Applicant's Claim 1, in any way teaches generation of either the first node order subset pair of Claim 1, or the node order pairs of respective graph partitions. Nor have such Claim 1 features been found elsewhere in Wallace. At col. 5, lines 24-27, Wallace teaches production of abstract nodes, which are described as directed acyclic graphs, in contrast to the cyclic compound directed graph with which Claim 1 is concerned.

VIII. Claims 2-6 Distinguish over Wallace

Claims 2-6 respectively depend from Claim 1, and are each considered to patentably distinguish over the art for the reasons given in support thereof.

Claim 6 is considered to further distinguish over the art, in reciting a detailed sequence of steps to provide a node order set, for use in determining an edge for inversion. Claim 6 depends from Claims 2 and 4, and therefore includes all the steps pertaining to sink and source nodes recited by such claims. In the Office Action, the Examiner acknowledges that Wallace does not disclose features such as identifying or removing sink nodes or source nodes. Moreover, Wallace does not teach, suggest or provide any incentives for one of ordinary skill in the art to modify the teachings of Wallace to realize present Claim 6. Any such modification would have to be very substantial, in view of the detailed sequence of steps recited by Claim 6. In the absence of clearly demonstrated prior art teachings or incentives, and without benefit of Applicant's teachings, one of ordinary skill in the art would not be led to modify Wallace to reach present Claim 6.

PAGE 14/15 * RCVD AT 3/13/2006 5:06:18 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-6/29 * DNIS:2738300 * CSID:972 385 7766 * DURATION (mm-ss):04-10

IX. Conclusion

It is respectfully urged that the subject application is patentable over U.S. Patent No. 5,978,588, to Wallace and is now in condition for allowance.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

DATE: March 13, 2006

Respectfully submitted,

James O. Skarsten
Reg. No. 28,346
Yee & Associates, P.C.
P.O. Box 802333
Dallas, TX 75380
(972) 385-8777
Attorney for Applicant

PAGE 15/15 * RCVD AT 3/13/2006 5:06:18 PM [Eastern Standard Time] * SVR:USPTO-EFXRF-6/29 * DNIS:2738300 * CSID:972 385 7766 * DURATION (mm-ss):04-10